Stoller
Hanford Office

DOE-EM/GJ917-2005

299-W15-54 (A7355)
Log Data Report

Borehole Information:

Borehole: 299-W15-54 (A7355)			**Site:** 216-Z-5 Crib		
Coordinates (WA State Plane)		**GWL (ft)[1]:** None		**GWL Date:**	05/23/05
North	**East**	**Drill Date**	**TOC[2] Elevation**	**Total Depth (ft)**	**Type**
135930.796	566538.501	04/47	679.13	138	Cable

Casing Information:

Casing Type	Stickup (ft)	Outer Diameter (in.)	Inside Diameter (in.)	Thickness (in.)	Top (ft)	Bottom (ft)
Welded steel	2.0	8 5/8	8	5/16	2.0	138

Borehole Notes:

A steel tape and caliper were used for casing measurements, and were rounded to the nearest 1/16 inch. Log data are referenced to the top of casing (TOC). The casing in this borehole is reported to be separated at approximately 75 ft. Logging was terminated at 70 ft to preclude potential problems.

Logging Equipment Information:

Logging System:	Gamma 1E		**Type:** SGLS (70%) 34TP40587A
Effective Calibration Date:	03/04/05	**Calibration Reference:**	DOE-EM/GJ864-2005
		Logging Procedure:	MAC-HGLP 1.6.5, Rev. 0

Spectral Gamma Logging System (SGLS) Log Run Information:

Log Run	**1**	**2 Repeat**			
Date	05/27/05	05/27/05			
Logging Engineer	Spatz	Spatz			
Start Depth (ft)	3.0	60.0			
Finish Depth (ft)	70.0	70.0			
Count Time (sec)	100	100			
Live/Real	R	R			
Shield (Y/N)	N	N			
MSA Interval (ft)	1.0	1.0			
ft/min	N/A[3]	N/A			
Pre-Verification	AE072CAB	AE072CAB			
Start File	AE072000	AE072068			
Finish File	AE072067	AE072078			
Post-Verification	AE072CAA	AE072CAA			
Depth Return Error (in.)	N/A	0			

Log Run	1	2 Repeat			
Comments	No fine-gain adjustment.	No fine-gain adjustment.			

Logging Operation Notes:

Pre- and post-survey verification measurements for the SGLS were acquired using the Amersham KUT (^{40}K, ^{238}U, and ^{232}Th) verifier with serial number 118. A centralizer was installed on the sonde.

Analysis Notes:

Analyst:	Henwood	Date:	06/29/05	Reference:	GJO-HGLP 1.6.3, Rev. 0

SGLS pre-run and post-run verification spectra were collected at the beginning and end of each day of logging. All of the SGLS verification spectra were within the acceptance criteria. Examinations of data indicate that the detector functioned normally during logging, and the data are accepted.

Log spectra were processed in batch mode using APTEC SUPERVISOR to identify individual energy peaks and determine count rates. Verification spectra were used to determine the energy and resolution calibration for processing the data using APTEC SUPERVISOR. Concentrations were calculated in EXCEL (source file: G1EMar05.xls). The casing configuration was assumed as one string of 8 5/8-in. outside diameter (OD) casing with a thickness of 5/16 in. to total depth (73 ft). No dead time or water corrections were applied to the data.

Log Plot Notes:

Separate log plots are provided for man-made radionuclides, naturally occurring radionuclides (^{40}K, ^{238}U, and ^{232}Th), and total gamma and dead time. A plot of the repeat log versus the original log are included. For each radionuclide, the energy value of the spectral peak used for quantification is indicated. Unless otherwise noted, all radionuclides are plotted in picocuries per gram (pCi/g). The open circles indicate the minimum detectable level (MDL) for each radionuclide. Error bars on each plot represent error associated with counting statistics only and do not include errors associated with the inverse efficiency function, dead time correction, or casing correction. These errors are discussed in the calibration report. A combination plot is also included to facilitate correlation. The ^{214}Bi peak at 1764 keV is used to determine the naturally occurring ^{238}U concentrations on the combination plot rather than the ^{214}Bi peak at 609 keV because it exhibited slightly higher net counts per second.

Results and Interpretations:

^{137}Cs, ^{60}Co, and ^{154}Eu were the man-made radionuclides detected in this borehole. ^{137}Cs was detected at two locations near its MDL of approximately 0.2 pCi/g.

^{60}Co was detected at 68 and 70 ft. A maximum concentration of 0.1 pCi/g was detected at 68 ft.

^{154}Eu was detected at 38 ft and between 60 and 71 ft. The maximum ^{154}Eu concentration was approximately 2 pCi/g at 68 ft.

The plot of the repeat log demonstrates reasonable repeatability of the SGLS data for the natural radionuclides.

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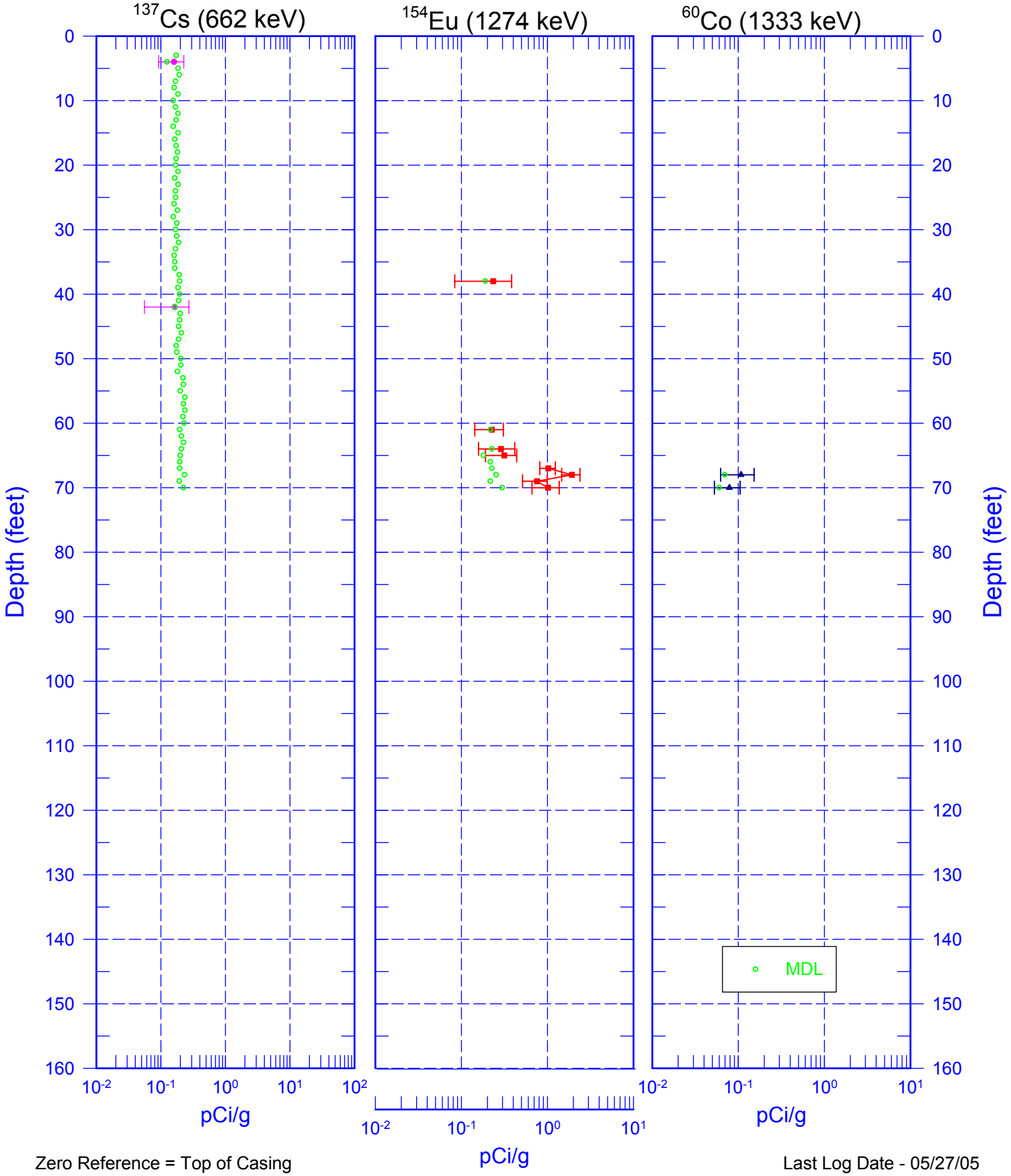
[1] GWL – groundwater level
[2] TOC – top of casing
[3] N/A – not applicable

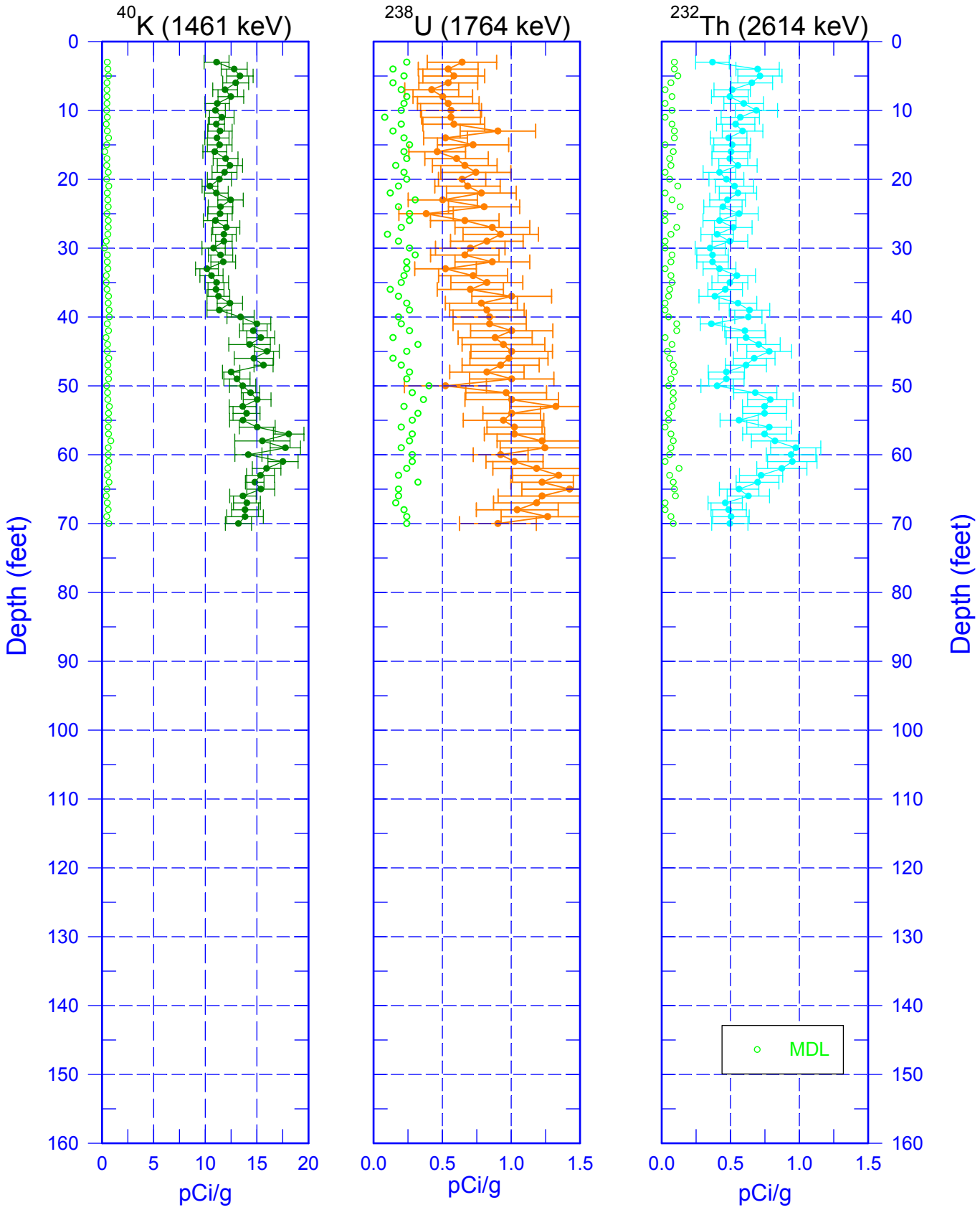
299-W15-54 (A7355)
Man-Made Radionuclides



Zero Reference = Top of Casing

Last Log Date - 05/27/05

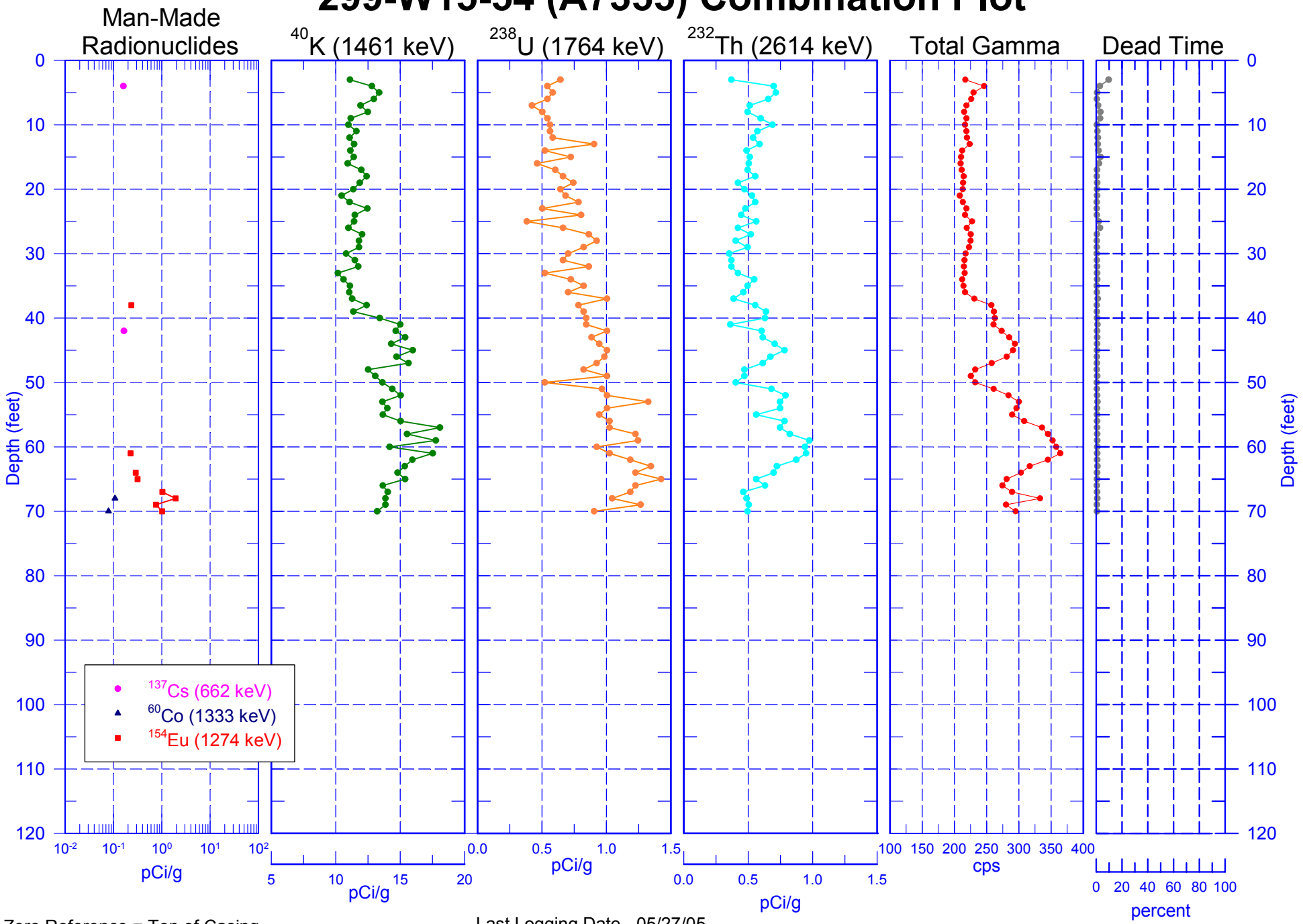
299-W15-54 (A7355)
Natural Gamma Logs



Zero Reference = Top of Casing

Last Log Date - 05/27/05

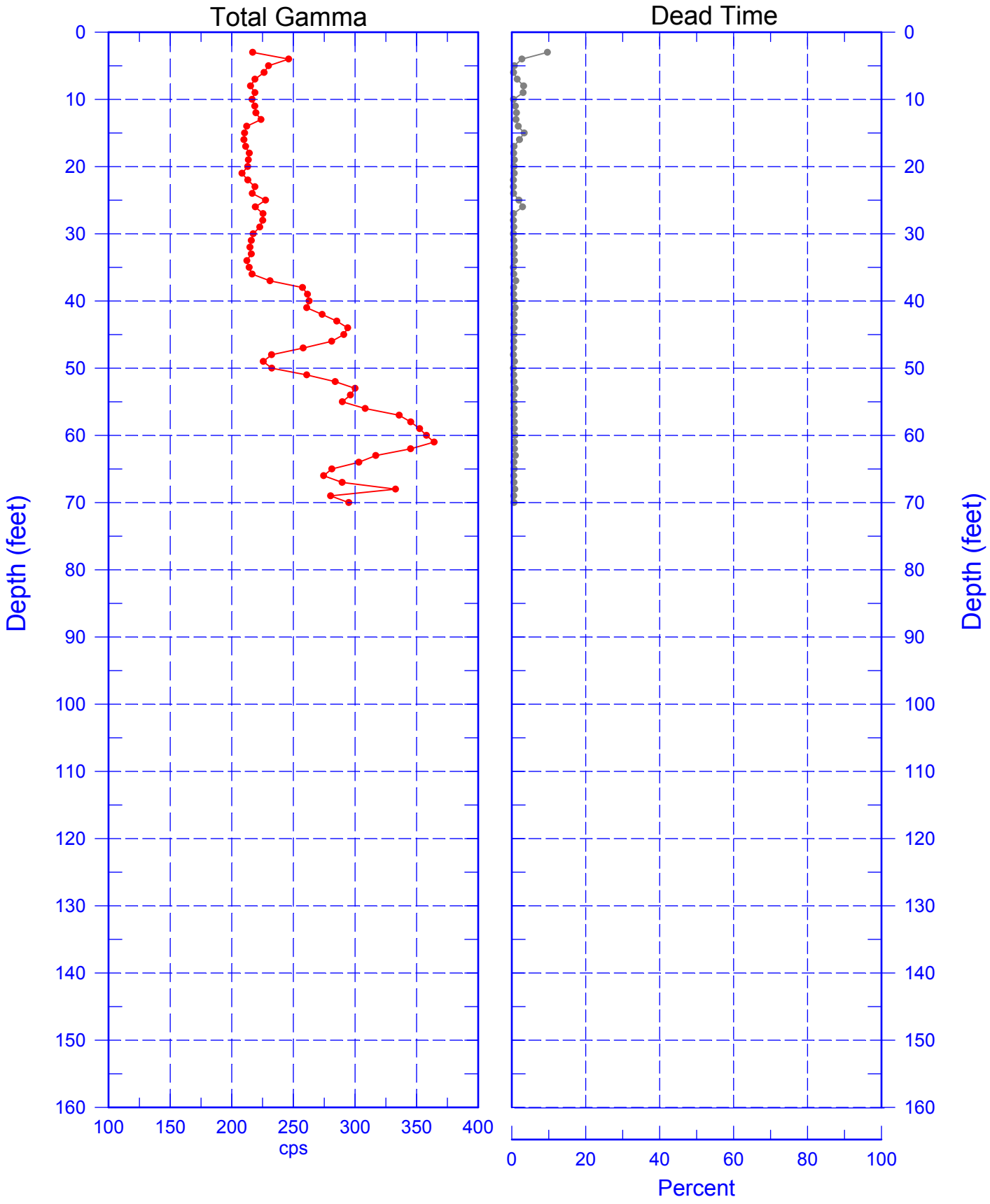
299-W15-54 (A7355) Combination Plot



Zero Reference = Top of Casing

Last Logging Date - 05/27/05

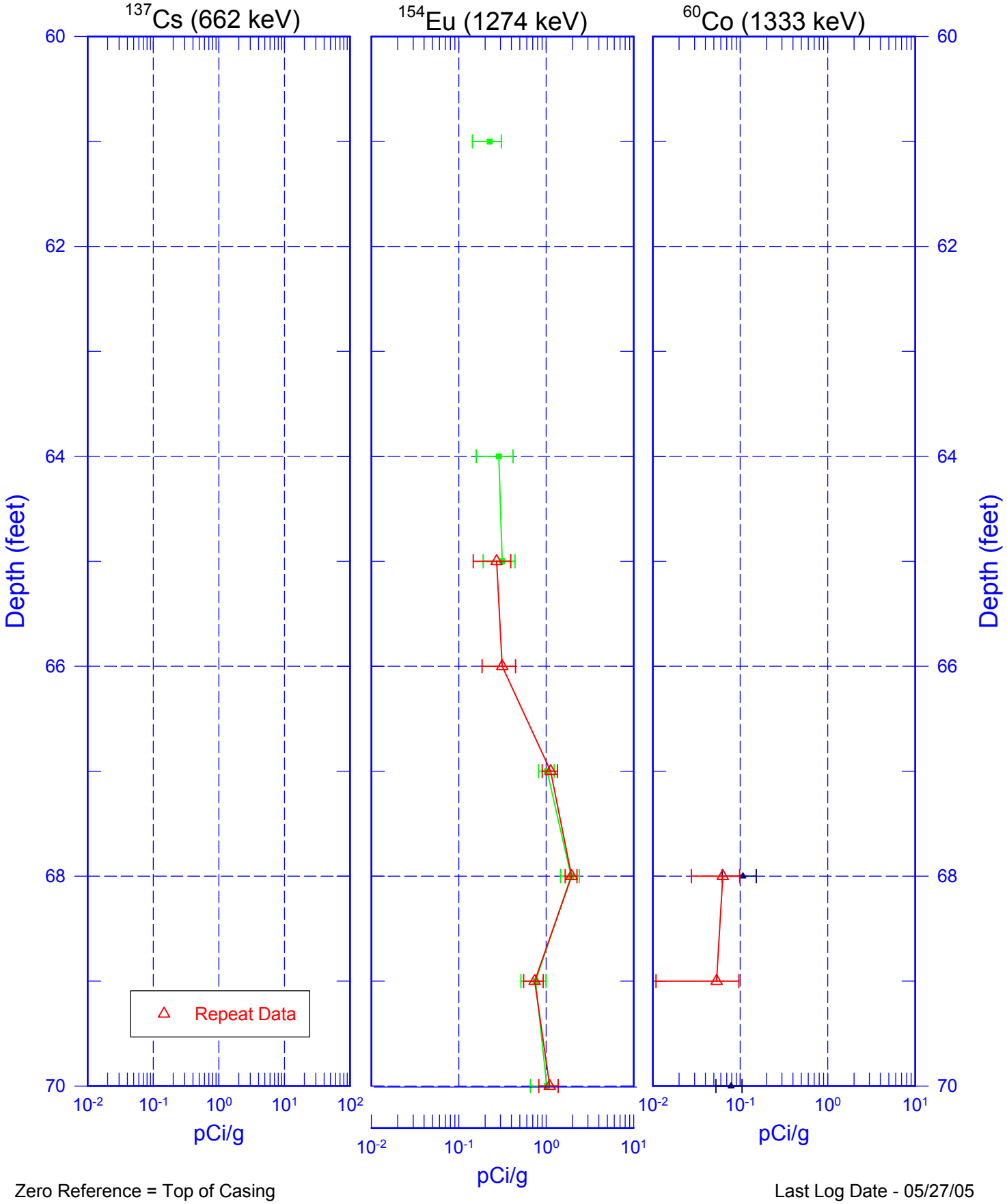
299-W15-54 (A7355)
Total Gamma & Dead Time



Zero Reference = Top of Casing

Last Logging Date - 05/27/05

299-W15-54 (A7355)
Man-Made Radionuclide Repeat Section

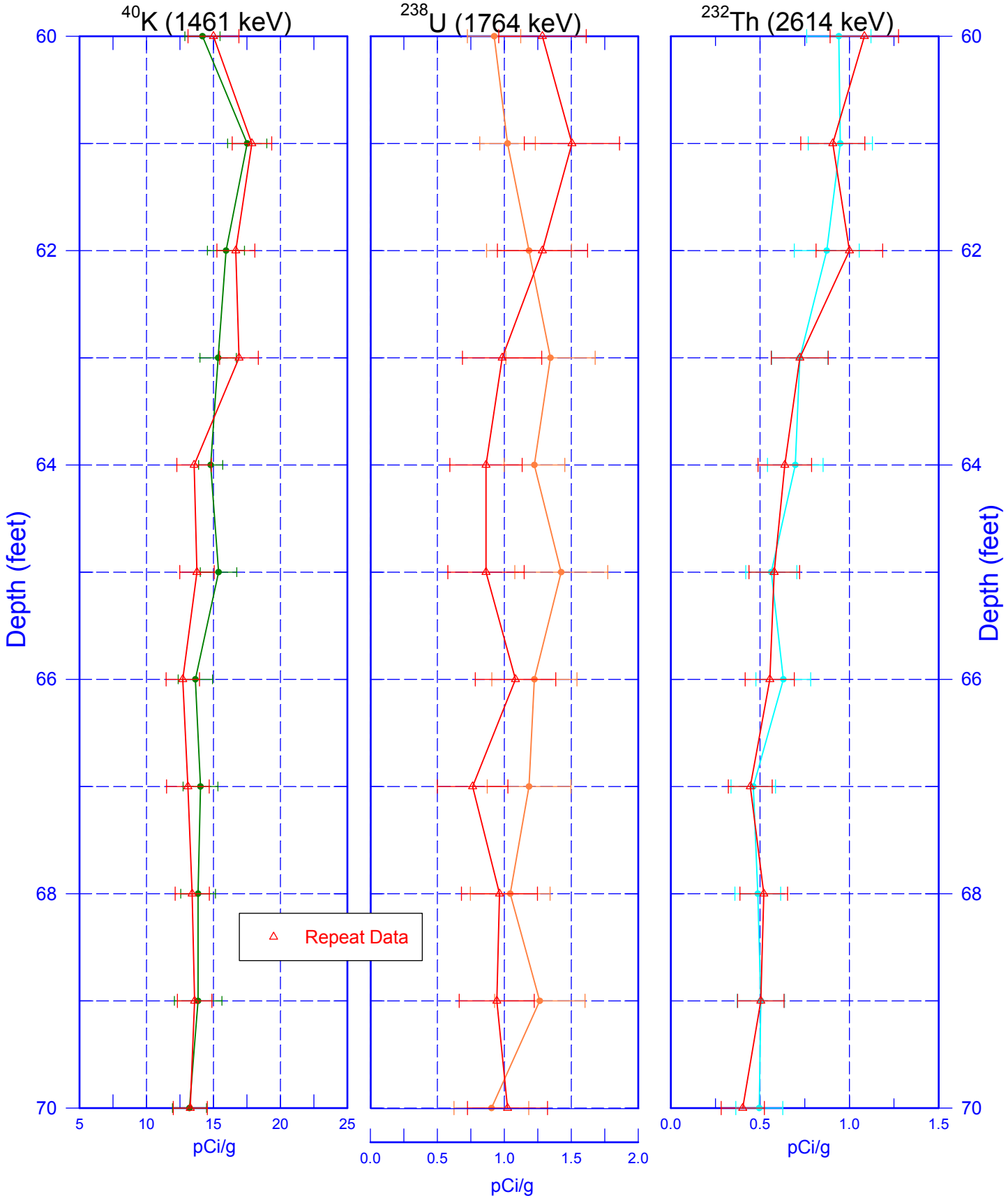


Zero Reference = Top of Casing

Last Log Date - 05/27/05

299-W15-54 (A7355)

Repeat Section of Natural Gamma Logs



Zero Reference = Top of Casing

Last Log Date - 05/27/05